third and fourth joints palely fuscous ; lateral areas of corium and the cuneus pale ochraceous; membrane pale fuliginous, the margins pale ochraceous; body beneath and legs ochraceous, intermediate and posterior tibiæ finely spotted with black, the spinules black ; structural characters as in generic diagnosis.

Length 3 mm.

*Hab.* Ceylon ; Peradeniya (*Green*).

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## IV.—*Descriptions and Records of Bees.*—XXIV.

By T. D. A. Cockerell, University of Colorado.

### *Ashmeadiella howardi*, sp. n.

♀.—Length about 5½ mm.

Similar to *A. gilletter*, Titus, but smaller, the femora and tibiæ entirely black; ventral scopa white ; tegulæ amber-colour ; fifth and sixth dorsal abdominal segments pruinose, with fine white hair. The first three abdominal segments are red, the rest black, abruptly contrasting ; the abdominal hair-bands are white and distinct.

♂.—Resembles the female, but flagellum black beneath, and first three abdominal segments red only at sides. The end of the abdomen has the usual four teeth ; the median ones quite long and pallid, the lateral triangular and oblique. The wings are slightly dusky.

*Hab.* ♀ (=type), San Gabriel Mts., Los Angeles County, California, 3000 feet, June 16, 1909 (*F. Grinnell, Jr.*); ♂, Pasadena, California, May 31, 1909 (*F. Grinnell, Jr.*).

This is evidently the species discovered by Dr. L. O. Howard at La Mesa, California, in April 1898, referred to by Mr. Titus in Proc. Entom. Soc. Washington, vol. vi. p. 100.

### *Alcidamea grinnelli*, sp. n.

♀.—Like *A. simplex* (Cresson), except that the mesothorax is much more regularly and evenly punctured, the tegulæ are pellucid testaceous, and the wings are darker, especially in the region about the stigma. Mandibles tridentate; flagellum ferruginous beneath ; ventral scopa white ; first r. n. entering second s.m. about as far from base as second from apex. The eyes are pale brownish and much narrower than in *Ashmeadiella meliloti* (Ckll.).

*Hab.* San Gabriel Mts., near Pasadena, California, 1750 feet, July 15, 1909 (*F. Grinnell, Jr.*).

*Chelostoma jacintanum*, sp. n. (*Cephalapis*, subgen. nov.).

♂.—Length a little over 8 mm.

Black (including the legs) except the sides of the first two abdominal segments, which are chestnut-red, the red more extensive on the base of the first; *head and thorax very densely and minutely punctured*, and with quite abundant white hair; *head large, quadrate, with very broad cheeks and vertex*, which are covered with appressed hair; face covered with white hair; clypeus very densely and minutely punctured, faintly carinate, *the lower margin very obtusely angularly produced in the middle, and with a minute denticle at each side*; mandibles hairy basally, faintly reddish toward apex, *tridentate, the two apical teeth prominent, the third separated by a long interval* and easily overlooked; *antennæ short, like those of a normal female of this group*, the flagellum faintly reddish beneath; *eyes large, very prominent*, green; *ocelli large, in a low triangle*; area of metathorax shining; tegulæ shining, rufo-testaceous. Wings reddish hyaline; *stigmatic part of marginal cell only about half as long as that bounding first submarginal; b. n. not quite reaching t.-m.; second s.m. with first r. n. joining it nearer, but not much nearer, its base than second r. n. its apex*, the distance of first r. n. from base hardly half length of first t.-c. Legs normal, small, joints of anterior tarsi ferruginous and of second slightly so; hind femora bulging at base below; hind spurs pallid, *simple*; pulvillus large. Abdomen shining, rather sparsely punctured; hind margins of first five segments with narrow white hair-bands; *basin of first segment not bounded by a transverse carina; seven dorsal segments;* sixth with the margin reddish hyaline, with a very low obtuse tooth on each side; seventh black, *produced into two large broad truncate teeth*, the interval between them about as great as the breadth of one; *five ventral segments visible*, fringed with pale hair, the fifth emarginate, the disk of the second with punctures running in transverse rows.

*Hab.* Kenworthy, San Jacinto Mts., California, 5000 feet, June 8 (*F. Grinnell, Jr.*).

In Robertson's table of Trypetine genera (Trans. Am. Ent. Soc. xxix. p. 167) this runs out at 2, but on the whole comes nearest to *Alcidamea*. It is far from being a typical *Chelostoma*; by reason of the characters italicized it may be regarded as the type of a new subgenus or genus *Cephalapis*. It is, perhaps, nearer to *Proteriades* than to *Chelostoma*.

*Halictoides mulleri*, Ckll., 1898.

This species was described from a single female. At Pasadena, California, April 8, 1909, Mr. Grinnell caught an insect which must be its male, having all the essential characters of the species, including the strongly bluish vertex, the broad head, &c. It is remarkable for the hind legs, of which the femora and tibiæ are greatly swollen (the latter also curved), while the flattened shining basitarsus is exceedingly short and broad, and broadly truncate apically. The flagellum is quite thick, with the apical two-thirds ribbed beneath.

*Hesperapis semirudis*, sp. n.

♀.—Length about 10½ mm.

Black, with dense entire creamy-white hair-bands on the apical margins of the abdominal segments; hair of head and thorax rather dull white, *long and black on vertex*; mesothorax and scutellum with short greyish hairs, giving a dusty effect, around their margins, and *scanty erect black hairs on the disk*; face (and especially vertex) shining, but mesothorax, scutellum, and large basal area of metathorax dull and minutely roughened; flagellum stout, dull reddish beneath; tegulæ blackish anteriorly, hyaline testaceous posteriorly. Wings dusky hyaline, stigma dull ferruginous, nervures fuscous; b. n. falling some distance short of t.-m.; second s.m. long, narrowed more than half to marginal, receiving first r. n. a trifle nearer base than second to apex; third discoidal cell with its apical angle much less than a right angle. Legs black, ordinary, the hind legs carrying much light yellow pollen; hind spurs white. Abdomen with a sericeous surface; in addition to the apical hair-bands there are thin basal ones; hind coxæ with a small apical tooth or spine on inner side.

Related to *H. eumorpha* (Ckll.) and *H. rhodocerata* (Ckll.), but easily known by the thoracic sculpture and large amount of black hair.

*Hab.* Kenworthy, San Jacinto Mts., California, 5000 feet, June 8 (*F. Grinnell, Jr.*).

*Diandrena puthua*, sp. n.

♂.—Length about 6⅓ mm.

Green; similar to *D. nothocalaidis*, Ckll., except that the hair of the face is wholly white, without any black; the eyes are rather broader and very prominent; the size is rather less; the spurs are white; and the area of metathorax has no

central raised line. The apical abdominal plate is broadly truncate, with rounded corners; its colour chestnut-red, with the apical margin broadly whitish.

♀.—Length about 6½ mm.

Similar to the male except for the usual sexual differences; flagellum ferruginous beneath except at base (in the male it is dark); hind margins of abdominal segments pale testaceous; third antennal joint as long as the next three combined; clypeus densely covered with shining white hair; facial foveæ linear, black. The hind legs are covered with white hair, but it hardly seems to amount to a polleniferous scopa (no pollen has been collected), and there is no curled basal floccus.

Can the insect be parasitic? The female is totally distinct from *D. nothocalaidis* and *D. chalybæa* by its small size, lack of black hair, &c. The first abdominal segment is shining in the female, dull in the male. In both sexes the process of labrum is bituberculate.

*Hab.* Pasadena, California, April 8, 1909, 2 ♂, 1 ♀ (*F. Grinnell, Jr.*).

The specific name, from the Malay, means white-haired. Judging from appearance, this seems to be a species which has adopted parasitic habits, in agreement with which the female (large in the pollen-collecting allies) has degenerated to the size of the male, and has lost its special polleniferous scopa. At the same locality, on the same day, Mr. Grinnell took *Andrena prunorum*, Ckll., two males.

### *Epeolus asperatus*, sp. n.

♀.—Length about 8 mm.

Black, with the usual ornamentation, pale yellowish cinereous; mandibles red except at tips; labrum black, reddish laterally; clypeus black, very densely punctured; head much broader than long; eyes pale purplish; vertex rugoso-punctate; antennæ black, second joint dull reddish toward apex; mesothorax and scutellum rough with extremely dense punctures; scutellum bigibbous, the lateral teeth black and very short; lower two-thirds of pleura bare, densely punctured; tubercles red, but covered with hair; tegulæ bright apricot-red; anterior part of mesothorax with two curved bands of pubescence and one joining them, making a letter **H**. Wings with the apical margin broadly dusky; nervures and stigma piceous; second t.-c. reduced to a small stump on both sides, so that there are only two submarginal cells. Abdomen deep black, with all the bands widely interrupted

in the middle; on the first segment the lateral portions of the black area are truncate, and about as long as the median portion measured by the interruption of the apical band; on the second segment the band gradually broadens laterally, with indications of an oblique notch; on the third and fourth the band is divided into two patches on each side, the inner one oval, the outer on the third subquadrate, with a pointed projection directed inwards, and on the fourth more or less hourglass-shaped; fifth segment with only an apical lunule; last ventral not prolonged or curved downwards. Legs black, with the knees, apices of tibiæ, and small joints of tarsi ferruginous; hind spurs dark, somewhat reddish.

On account of the ornamentation of the abdomen it closely resembles *Triepeolus verbesinæ* (Ckll.). The venation would almost put it in *Phileremus*, but it is not very near to other species so referred.

*Hab.* Los Angeles, California, April 24, 1909 (*F. Grinnell, Jr.*).

*Triepeolus gabrielis*, sp. n.

♂.—Length about 7 mm.

Black, with the usual ornamentation, which dorsally, especially on the abdomen, has a yellowish tinge, but on the face, pleura, &c. is white; mandibles ferruginous; labrum and clypeus black, the former with two little tubercles near its lower edge; clypeus densely and minutely punctured; eyes brown, converging below; antennæ black, third joint slightly reddish; vertex coarsely rugoso-punctate; mesothorax and scutellum coarsely and very densely punctured; pubescent mark on anterior part of mesothorax forming a large reversed **U**, of which the basin is about half filled in and the edges flare outwards a little; scutellum hardly bigibbous, the lateral teeth black and very short; pleura hairy all over, but in the middle the hair is denser, making a sort of broad white band; tubercles and tegulæ apricot-red. Wings broadly dusky on apical margin; marginal cell so blunt as to be practically truncate; second s.m. narrowed almost to a point above. Femora with short silvery hair; legs black, the femora at extreme apex, tibiæ at apex and base, and tarsi ferruginous; spurs light ferruginous. Abdomen with the ground-colour intense black and the bands broad, that on first with a rather wide interruption, on second and third with a linear interruption, on fourth and fifth entire; black area on first segment a broad band, obliquely truncate but with rounded corners at sides; upper edge of light band on second segment with a double curve on each side, the lateral enlargement

gradual; second and third ventral segments with much white tomentum, those beyond the third dark.

*Hab.* San Gabriel Mountains, near Pasadena, California, 1750 feet, July 15, 1909 (*F. Grinnell, Jr.*).

The size and general appearance is like that of *T. norœ*, Ckll., but the new species is easily separated by the colour of the legs, the marking of the second abdominal segment, &c.

At the same locality, on the same day, Mr. Grinnell took *Bombus vosnesenskii*, Rad.

### Pseudomelecta, Radoszk.

This genus was based on certain Asiatic species in which the scutellum is bituberculate and the hair of the thorax is short, as in *Crocisa*. The American species of the group of *M. miranda*, Fox, are very distinct from true *Melecta*, and I had some idea of separating them under a new generic name, but I believe they may be correctly referred to *Pseudomelecta*. The ornamentation of the abdomen is *Epeolus*-like, and the five-jointed maxillary palpi are very small; for particulars concerning the mouth-parts see Ann. & Mag. Nat. Hist., July 1902, p. 45. Genuine *Melecta* is much more like *Bombomelecta* than *Pseudomelecta* in appearance, and even in scutellar structure. I have examined the mouth-parts of *M. armata*, Panz., and find them to be similar to those of *Pseudomelecta miranda*, but the maxillary palpi, though five-jointed, are quite long (970 $\mu$), while those of *P. miranda*, a bee of about the same size, are only about 425 $\mu$. The hyaline area of the maxillary blade is much broader in *M. armata* than in *P. miranda*. Thus *Melecta* (which does not occur in America) falls exactly between *Bombomelecta* (exclusively American) and *Pseudomelecta* (Asiatic and American). Of these, *Bombomelecta* is the most primitive, having very long six-jointed maxillary palpi, while *Pseudomelecta* is the most advanced. The group probably originated in America, migrated to Eurasia, and finally gave back to America the much modified type *Pseudomelecta*. The American forms of the latter genus are :—

*Pseudomelecta californica* (Cresson).
*Pseudomelecta californica miranda* (Fox).
*Pseudomelecta interrupta* (Cresson).
*Pseudomelecta interrupta fallugiæ* (Ckll.).
*Pseudomelecta interrupta rociadensis* (Ckll.).
*Pseudomelecta pasadenensis*, sp. n.

♀.—Length about 12 mm.

Agreeing with *P. californica miranda*, except as follows:

a tuft of black hair below each antenna, and a large tuft above (in *miranda* and *californica* the tuft above is always white); middle tufts of black on anterior part of mesothorax large and not taking the form of stripes; tegulæ finely punctured, very dark, only the edges reddish; points of scutellar lobes not so close together; tarsi all black; marginal cell less truncate; first abdominal segment with the band more widely interrupted; no light spots on basal declivity. Perhaps only a subspecies of *californica*.

*Hab.* Pasadena, California, April 30, 1909 (*F. Grinnell, Jr.*).

The characters of the claws and mandibles, cited by Patton and Fox as distinctive of *Bombomelecta*, are also found in true *Melecta*.

*Ceratina acantha*, Provancher, 1895.

Mr. H. S. Smith, in Trans. American Ent. Soc. xxxiii. p. 121, has stated that *C. acantha*, of which he examined the female type, is identical with *C. submaritima*, Ckll. In this I think he is mistaken, owing to the failure to separate a distinct species common in Los Angeles County, California, to which the name *acantha* properly applies. The female *submaritima*, of which I have seen many examples, has no light mark on the clypeus; whereas Provancher's description calls for such a mark, and it is present in a species agreeing well with the description, taken by Mr. Grinnell in some numbers at Pasadena, April 8, May 21 and 31, and Aug. 26. The females, except for the dark tubercles and strongly dusky wings, are much like *C. nanula*, Ckll. Fortunately there are two males, noteworthy for the following characters: yellow mark on clypeus with the lateral projections much larger than the median, the latter faintly or decidedly bifid; labrum with a large pale yellow mark; front a fine deep blue; thorax strongly bluish; tubercles dark; wings strongly dusky; abdomen blue-green; apical plate with the terminal process broader than Smith figures for *acantha*, though not so broad as *nanula*, and slightly angled or pointed at the apex.

This is certainly distinct from *submaritima*, though related. The type of *acantha* was from Los Angeles. Mr. Grinnell took a small female *submaritima* in Arroya Seco Cañon, San Gabriel Mts., California, October 8.

A female *C. nanula* was taken by Mr. Grinnell in Arroyo Seco Cañon, June 17. Although this has light tubercles, the wings are darker than usual in *nanula*, so I hesitated whether to regard it as a variety of *C. acantha*. I observe, however,

that the occipital region is more developed in *nanula* than in *acantha*; and as this condition is even rather exaggerated in Mr. Grinnell's specimen, I place it with *nanula*.

*Ceratina tejonensis*, Cresson.

This species, based on a single male from Fort Tejon, California, seems to be extremely rare. What I take to be its female was obtained by Mr. Grinnell at 3000 ft. in the San Gabriel Mts., California, June 16. It has dark tubercles like *acantha*, but it is much larger (8 mm. or a little over); the wings are strongly dusky, and the clypeus has a cuneiform ivory-coloured mark. The whole insect is very much darker and bluer than *C. neomexicana*, Ckll. The pleura is very strongly and coarsely punctured.

*Megachile chrysopyga*, Smith, 1853.

A cotype from F. Smith's collection, with the locality-label "Australia," is identical with my *M. maculariformis*. The description of *chrysopyga* disagrees with the specimens in respect to the ventral scopa and apparently the abdominal bands; it is just possible that typical *chrysopyga* (from Tasmania) is separable.

*Prosopis polifolii*, Ckll., 1901.

Mr. Grinnell has taken this in some numbers at Pasadena, California, April 8, 1909. The males vary, some having a black line on each side of the clypeus, between it and the lateral marks. The female, not previously known, is very much like *P. tuertonis*, Ckll., but has the face rather broader. Sometimes the tegulæ have no light spot, and the lateral face-marks are extremely narrow.

*Prosopis hesperiphila*, sp. n.

♂.—Similar to *P. polifolii*, but differing thus: supraclypeal mark represented by a hardly visible transverse line (probably not constant); clypeus broader; lateral marks truncate above and strongly notched by antennal sockets. Wings dusky; marginal cell very narrowly obliquely truncate at apex; second s.m. broader; tegulæ with a light mark. The mesothorax is extremely densely and minutely punctured, and the face-markings are of the palest possible shade of yellowish.

*Hab.* Tahquitz Valley, San Jacinto Mts., California, 8000 ft., July 21 (*F. Grinnell, Jr.*).

A female taken at the same time and place proves to be only *P. polifolii*.

*Prosopis pasadenæ*, sp. n.

♂.—A very small species, in every way related to *P. mesillæ*, Ckll., but distinguished by the upward extensions of the lateral face-marks, which, instead of being short and broad, are long and slender, curving away from the orbits. The tubercles are variable, dark or spotted. Unlike the *P. digitata* group, the outer margin of the lateral face-marks is even, without any notch or angle at the beginning of the upward process. The first abdominal segment is very shiny, the second dullish.

♀.—Like that of *P. cressoni*, Ckll., but the wings greyish; or when the clypeus is not entirely dark, like that of *P. mesillæ* in its darker forms, but lateral face-marks pointed above, away from orbit, and upper margin of prothorax all black.

*Hab.* Pasadena, California, April 8 to May 31 (*F. Grinnell, Jr.*); near Pasadena, at 1100 ft., July 21 (*F. Grinnell, Jr.*).

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## V.—*New Species of Diploptera in the Collection of the British Museum.* By Geoffrey Meade-Waldo, B.A.

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### Part I.

During a recent rearrangement of this family in the National Collection I have found a number of species which are apparently undescribed; of these species I have now written descriptions, which I hope to publish in two or three consecutive papers.

In the present paper there are descriptions of new species of the families Masaridæ and Eumenidæ (as far as the genus *Rhynchium*).

All measurements of length are taken from the front of the head to the apical margin of the second abdominal segment, except where the *total* length is expressly mentioned.

The types are all in the National Collection.